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Der Präsident des Europäischen Patentamts;
Im Auftrag

For the President of the European Patent Office

Le Président de l'Office européen des brevets
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(Falls die Bezeichnung der Erfindung nicht angegeben ist, siehe Beschreibung.
If no title is shown please refer to the description.
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Method and device for message delivery

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METHOD AND DEVICE FOR MESSAGE DELIVERY

Technical Field of the Invention

The present invention relates to a method and a
5 device for entering and forming an electronic message
having a geographical display condition. The present
invention also relates to a method and a device for
forwarding such a message. Finally, the present invention
also relates to a method and a device for displaying such a
10 message.

Description of Related Art

Electronic messages like SMS (Short Message Service),
EMS (Enhanced Message Service), and MMS (Multimedia Message
15 Service) may be sent from one electronic communication
device to another. The device transmitting the message may
be portable, such as a mobile telephone. Alternatively, the
transmitting device is stationary, such as a computer
having access to the same communication network as the
20 device receiving the message. Similarly, the receiving
device may be stationary or portable. The message may be
announced in the receiving device by a notification that a
message is received or may be downloaded from a remote
service node of the communication network.

25 A problem with both received electronic messages and
notification messages is that the message or the
notification message may not be relevant at once when the
message is received. To be able to determine whether the
message is relevant, the user has to read the electronic
30 message, e.g. by downloading the message from a server. For
example, Peter realizes that he and his wife Sara have run
out of a specific type of ice cream only available in
grocery store G. Thus, Peter sends an SMS message to Sara
asking her to buy the specific type of ice cream only if
35 she passes grocery store G on her way home. Sara receives

the message without any delay when she is driving the car. However, Sara will not pass grocery store G on her way home. To do so, she would have to take a detour. Thus, the message is not relevant for Sara, as Peter only asks her to
5 buy the specific type of ice cream if she passes grocery store G. Furthermore, Sara had to read the message while driving, which could be dangerous depending on the traffic situation. Consequently, it would have been better, if Sara would not have received the SMS message at all.

10 W0 03/056487 discloses a personal device for generating a reminder to a user comprising a memory for storing a memory note. The device comprises detection means for detecting that an external unit is present in the vicinity of the personal device. An address to the external
15 device is stored together with the memory note. The memory note is an internal note, which has been entered by the user of the personal device. The personal device does not take care of the problem of sending messages between different terminals, which may cause problems as presented
20 above, and which in some situation may be undesirable.

EP-A-1 148754 discloses a method for sending position data between a first and a second terminal by using SMS messages. In response to receiving a first message in a first terminal a second message is transmitted to a second
25 terminal. The second message comprises location data, which may be used by the second terminal to determine the physical distance between the terminals. However, the messages are unconditionally displayed, which as described above could be undesirable in certain situations depending
30 on the content of the message and the location of the receiver of the message.

Summary of the Invention

It is an object of the invention to provide a method,
35 a communication device and a computer program product for

preventing unnecessary displaying of an electronic message or an electronic notification message announcing an electronic message.

According to a first aspect of the invention, it
5 comprises a method for conditional displaying of an electronic message comprising at least one display condition for the message in a portable electronic device. The method comprises the steps of, receiving the message from an external device, determining the geographical
10 position of the portable electronic device, determining whether the geographical position fulfills a geographical display condition of the message, and displaying the message in the portable electronic device if the at least one display condition is fulfilled.

15 The step of determining whether the geographical position fulfills the geographical display condition may comprise determining whether the portable electronic device is located within a geographical area specified by the geographical display condition.

20 The step of determining whether the geographical position fulfills the display condition may comprise determining whether the portable electronic device is located within a certain distance specified by the geographical display condition from the location of another
25 electronic device, which has transmitted the message.

The method may also comprise determining whether a time limit of a time display condition for indicating a final display time of the message has lapsed, wherein the step of displaying is executed if said time limit has not
30 lapsed when the geographical display condition is fulfilled.

According to a second aspect of the invention, it comprises a method for forming an electronic message in an electronic device. The message is entered together with at
35 least one display condition comprising a geographical

display condition for conditional displaying of the message. The display condition is appended to the message. Also, a receiver address to which the message should be sent is entered.

5 The step of entering the display condition may comprise the step of entering a geographical area in which an portable electronic device to which the message should be forwarded should be located when the message is displayed. Alternatively or additionally, the step of
10 entering the display condition may comprise the step of entering a certain distance with regard to a specific geographical area, within which a portable electronic device to which the message should be forwarded should be located when the message is displayed.

15 The entering the display condition comprises the step of entering a geographical area in which the electronic device should be located when the message is displayed in another electronic device.

 According to a third aspect of the invention, it
20 comprises a method for forwarding the electronic message from an electronic communication device to a portable electronic communication device. The method comprises the steps of receiving the message from the electronic communication device, receiving the geographical position
25 of the portable communication device, determining whether the geographical position of the portable communication device fulfills a geographical display condition of the message, and forwarding the message to the portable communication device when at least the geographical display
30 condition is fulfilled.

 The display condition may comprise a time display condition. The step of determining may comprise determining whether a time limit of a time display condition has lapsed, wherein the step of forwarding is only executed if
35 said time limit has not lapsed when said geographical

position fulfills said geographical display condition. Otherwise, the message is discarded if the geographical position does not fulfill said geographical display condition within said time limit.

5 The display condition may require that the portable communication device is located within a certain distance specified by the geographical display condition from the electronic communication device.

10 The forwarding method may also comprise receiving the geographical position of the electronic communication device, being a portable electronic communication device, from said device itself.

15 According to a fourth aspect of the invention, it comprises a portable electronic device for displaying an electronic message having at least one display condition for conditional displaying of the message. The device comprises display means for displaying the electronic message, receiving means for receiving the message from an external device, position determination means for
20 determining the geographical position of the portable electronic device, and determining means for determining whether the geographical position fulfills a geographical display condition of the message.

25 The device may also comprise a message interface adapted to display the electronic message if the geographical position fulfills the geographical display condition.

30 The determining means may also be adapted to, in operation, determine whether the portable electronic device is within a geographical area specified in the geographical display condition or within a certain distance therefrom. Furthermore, the determining means may be adapted to determine, in operation, whether the portable electronic device is located within a certain distance from another

electronic device, from which the electronic message has been transmitted.

The electronic message may be an SMS, an EMS, or an MMS message, or a notification message thereof.

5 According to a fifth aspect of the invention, it comprises an electronic communication device for forming an electronic message therein. The communication device comprises input means for entering the electronic message, and at least one display condition for conditional
10 displaying of the message to be appended to said message, a message interface for forming the electronic message. The message interface is adapted to append to the electronic message a geographical display condition. Furthermore, the electronic device comprises transmitting means for
15 transmitting the message to an external device.

The message interface may be adapted to incorporate into the geographical display condition information with regard to a geographical area, in which the external device should be located when the electronic message is displayed
20 therein.

The message interface may be adapted to incorporate into the geographical display condition information with regard to a certain distance from the electronic communication device within which the external device
25 should be located when the electronic message is displayed.

The may be a mobile radio terminal, a pager, a personal digital assistant, a communicator, a smartphone an electronic organizer, or a mobile telephone.

According to a sixth aspect of the invention, it
30 comprises a network node being a part of a communication network for forwarding an electronic message having at least one display condition for conditional displaying of the message. The node comprises receiving means for receiving the electronic message from a first electronic
35 communication device, a memory means for temporarily

storing the electronic message. The electronic message comprises a geographical display condition. A position determining means is adapted to determine the geographical position of at least the second communication device.

- 5 Determining means is adapted to determine whether the geographical position fulfills the geographical display condition.

- 10 The display condition may require that at least the second electronic communication device is located within a certain distance of a specific geographical area when the message is forwarded. The determining means may be adapted to determine whether the second electronic communication device is located within said geographical area.

- 15 The display condition may require the second electronic communication device to be within a certain distance of the first electronic communication device when the message is forwarded to the second electronic communication device. The determining means may be adapted to determine whether the second electronic communication device is located within said geographical area.

20 The node may be adapted to forward the electronic message to the second electronic communication device when at least one display condition is fulfilled.

- 25 According to a seventh aspect of the invention, it comprises a software program product embodied on a computer readable medium, comprising computer readable instructions for carrying out any one of the methods according to the invention when carried out by a processor.

- 30 Further embodiments of the invention are defined in the dependent claims.

- It is an advantage of the invention that electronic messages will not be displayed until they are relevant for the receiver. Furthermore, messages that will never be relevant for the receiver will never be delivered at all, reducing traffic in the network, wherein network capacity

is made available. Not displaying irrelevant messages has the further advantage of reducing the power consumption compared to displaying the message unconditionally. Also, conditional displaying has the advantage that the receiver will not be put at any risk by receiving the message in situations where reading the message could be dangerous, such as in traffic situations as described above. There are other situations where it might be better to not receive the message, such as when anything from the environment of the user that he has no influence could be a potential risk.

It should be emphasized that the term "comprises/comprising" when used in this specification is taken to specify the presence of stated features, integers, steps or components but does not preclude the presence or addition of one or more other features, integers, steps, components or groups thereof.

Brief Description of the Drawings

Further objects, features, and advantages of the invention will appear from the following description of several embodiments of the invention, wherein various aspects of the invention will be described in more detail with reference to the accompanying drawings, in which:

Fig. 1 is a schematic view of a portable communication apparatus connected to a communication network and a position determination system;

Fig. 2 is a block diagram of certain components of the mobile terminal of Fig. 1;

Fig. 3 is a block diagram of certain components of a network node of the communication network for relaying messages according to the invention;

Figs. 4a-4c are block diagrams of communication devices illustrating geographical display conditions according to the invention;

Fig. 5 is a flow-chart of a method for forming messages according to the invention;

Fig. 6 is a flow-chart of a method for relaying messages according to the invention; and

5 Fig. 7 is a flow-chart of method for displaying messages according to the invention.

Detailed Description of Embodiments

10 The present invention provides methods and devices for conditional displaying of an electronic message or electronic notification message announcing an electronic message when one or several display conditions associated with the message are fulfilled. The present invention provides the possibility to delay displaying the message
15 until the electronic device, and thus the user, is located at a certain geographical position. With regard to an electronic message received in one electronic device from another, the receiving device has to be located at or within a certain distance from a specific geographical
20 position when the message or a notification thereof is displayed.

An electronic message within the meaning of the present invention may be a message received from another communication device, and is thus an external message. The
25 electronic message may be displayed directly at the device receiving the message. Alternatively, the electronic message according to the invention is an electronic notification or alert message notifying the user that an electronic message has been received at the device itself
30 or is available at a service node of the communication network relaying the message. The message may be temporarily stored at the service node until it is downloaded to the addressed device. The electronic message may e.g. be an SMS (Short Message Service), an EMS

(Enhanced Message Service), or an MMS (Multimedia Message Service) message.

The electronic message or the notification thereof according to the invention may be displayed visually on a display or by signal lamps or other equipment for visual
5 signalizing to the user. The message may also be displayed audibly in by means of a loudspeaker. The message may be rendered by transmitting a prerecorded or synthesized message, which may form part of the received message. The
10 message may also be displayed sensibly by a vibrator signal.

Fig. 1 illustrates a portable electronic device embodied as a mobile terminal 1 or mobile telephone. The invention is not limited to a mobile terminal 1, but can be
15 incorporated into any portable electronic device having the possibility to display a message or a notification message. The mobile terminal 1 may be arranged to receive and/or transmit electronic messages, and comprises means for determining or announcing its geographical position. A
20 portable electronic device according to the invention comprises, but is not limited to, a mobile radio terminal, a mobile telephone, a pager, a personal digital assistant (PDA), and a communicator, i.e. a smartphone or an electronic organizer. For convenience, reference to a
25 mobile terminal 1 will be made throughout this description. Furthermore, electronic communication devices capable to send electronic messages according to the invention may also be stationary, such as a desktop or laptop computer.

The portable communication device according to the
30 invention is not limited to a portable communication device per se, but can be incorporated into semi-portable or semi-stationary devices. Such semi-stationary devices comprises electronic equipment mounted into a moveably device, e.g. electronic equipment mounted into a vehicle.

The mobile terminal 1 comprises a man-machine or user interface (UI) comprising, but not limited to, a keypad 10, a microphone 11, a loudspeaker 12 and a display 13. The user interface may be used for operating and interacting with the mobile terminal, such as fetching an announced electronic message, and reading/writing an electronic message.

The mobile terminal 1 may optionally comprise various communication means for communicating with other electronic equipment. A first antenna 14 is adapted for communication with e.g. a mobile telecommunication network 15 over a first wireless link 16. The telecommunication network 15 may e.g. be a GSM (General System for Mobile communication), a UMTS (Universal Mobile Telecommunications System), a PDC (Personal Digital Cellular system), a IS-136, a IS-95, a IMT-2000 (International Mobile Telecommunications 2000) or any other communication network utilizing any of the frequency division, time division or code division techniques.

A second antenna 17 is adapted for short-range supplementary communication with a local area network 18 or a peripheral electronic device over a second wireless link 19. The second wireless link 10 may e.g. be a Bluetooth[®] link.

A third antenna or reception means 20 is adapted to receive position and time data from several satellites 21 (only one is shown) or pseudolites 22 (only one is shown). With pseudolite is meant a position data transmitting means, which is located on the ground and which transmits data similar to position and time data transmitted from a satellite 21. The mobile terminal 1 is adapted to determine the geographical position of the mobile terminal 1 on the surface of the earth. To determine the position, data from several satellites 21 or pseudolites 22 have to be received. The position and time data received from several

pseudolites 22 may be used similar to position and time data received from the satellites 21 to determine the geographical position of the mobile terminal 1. The pseudolites 22 may e.g. form a local network for position determination in places wherein signals from the satellites 21 may not reach the mobile terminal 1.

An accessory connector 23 is provided for connecting the mobile terminal 1 to various peripheral devices. A computer 24 having input means, such as a keyboard and a mouse, may be connected to the accessory connector 23 by means of a cable 25, such as a serial cable. Alternatively, the computer 24 is connected to the mobile terminal 1 by means of a wireless link, such as the second link 19. The mobile terminal 1 may be connected to a global information network, such as the Internet, e.g. through the computer 24 or the mobile telecommunication network 15. It is possible to write messages according to the invention by means of the computer, which message may be transmitted to the communication network 15 through the mobile terminal 1. Alternatively, the message is transmitted through a connection to the global information network.

Fig. 2 illustrates components of the mobile terminal 1 according to the invention. The first and second antennas 14, 17 are connected to a communication unit 30. The communication unit 30 provides wireless communication capabilities for communicating with the mobile telecommunication network 15 and the local area network 18 according to any of the above mentioned technologies. To provide the communication capabilities, the communication unit 30 comprises e.g. a receiver/transmitter, a modulator/demodulator, a coder/decoder, analog-to-digital (A/D) converters, amplifiers, and a digital signal processor.

A position determination unit 31 is connected to the third antenna 20. The position determination unit 31 is

adapted to determine the geographical position of the mobile terminal 1 on the earth based on received position data. One such system for determining the geographical position comprises a GPS (Global Positioning System) receiver, which may receive positioning and timing data from the satellites 21 orbiting the earth or from the pseudolites 22 positioned on the surface of the earth. Based on the received position and timing data, the position determination unit 31 will generate a very exact geographical position of the mobile terminal 1.

Alternatively, the position determination unit 31 uses another position determination system, such as a network based positioning system, which may be collocated or consolidated with the base stations of the mobile telecommunication network. The network based positioning system determines the geographical position of the mobile terminal 1 e.g. based on received signal measurements. The measurements may comprise angle of arrival, time difference and signal strength of received signals. Once the geographical position of the mobile terminal 1 is determined, it may be reported back to the terminal 1.

It is also possible to determine the position of the mobile terminal 1 in a GSM telecommunication system. The mobile terminal 1 receives timing data from three different base transceiver stations. Based on the arrival time of the data received from the base transceiver stations, the geographical position of the mobile terminal 1 may be determined. One such system is the E-OTD (Enhanced Observed Time Difference).

A hybrid approach is that the mobile terminal 1 collects measurement data from its environment that are reported back to the network, which in turn uses the data to determine the geographical position of the mobile terminal 1, which may be reported back.

The position determination unit 31 is connected to a controller or central processing unit (CPU) 32, which may be used to implement one or several units of the mobile terminal 1 by software readable instructions.

- 5 The controller 32 is connected to a memory 33, which may comprise one or several storing means for temporarily and permanent storage of data and software instructions, such as a random access memory and a read only memory, in which geographical data and message data may be stored. The
- 10 controller 32 is adapted to repeatedly obtain the specific geographical position or area, possibly by interrogating the position determination unit 31, in which the mobile terminal 1 currently is located. The determination is made with a predetermined time interval, such as every 10th
- 15 second or every 5th minute. The time interval may be default or user defined as desired. Alternatively, the time interval is adaptively set depending on the speed of the mobile terminal 1, which may be determined by the position determination unit 31. The controller 32 may form part of
- 20 the position determination unit 31. Alternatively, the position determination unit 31 comprises a separate processor for determining the geographical area in which the mobile terminal 1 is currently located.

- A message interface or unit 34 comprises means for
- 25 forming a message and append one or several associated display condition thereto. Also, the message interface 34 appends a receiver address, such as a telephone number, to the message when it should be transmitted to a remote communication device. The message interface 34 may form
- 30 part of the user interface and be accessible by means of user selectable menus presented in the display 13. In a first window the user may enter the message, whereas the display condition(s) may be entered in a second window appearing when the message is completed. Thus, the message

comprises a message or data payload field, an address field, and a display condition field.

Fig. 3 illustrates a service node 50 according to the present invention, which may form part of the communication network 15. The service node 50 may comprise of one or several sub-nodes, which are not located at the same position within the communication network 15. In a GSM system, the service node may e.g. form part of the visitor location register (VLR) which currently administrates the mobile telephone. Alternatively, the service node 50 forms a part of the home location register (HLR) in a GSM system.

The position of the mobile terminal 1 may be determined at the service node 50. The mobile terminal 1 may report terminal data uniquely identifying the terminal within the communication network. Depending of which one or several base stations that receives the terminal data, the position of the mobile terminal 1 may be determined by a position determination unit 51. The service node also comprises a communication unit 52 comprising a receiver for receiving an electronic message from a first electronic communication device and a transmitter for forwarding said message. The message or a notification thereof is forwarded when a second electronic communication device to which the message is addressed fulfills at least a geographical display condition specified in the message, as will be explained below. A memory 53, such as the memory 33 of the mobile terminal 1 is provided for temporarily storing the message and geographical position data. A central processing unit 54 may administrate the relaying of the message. Therefore, the processing unit 54 may comprise a condition unit 55, which may determine whether the conditions associated with the message are fulfilled. If so the controller 54 may transmit the message or the notification thereof to the addressed communication device.

The condition unit may also be provided as a stand-alone unit.

The message may be announced and downloaded even if all display conditions are not fulfilled. Thus, the
5 receiving device will determine when to display the message.

A proximity function may indicate whether the mobile terminal 1 is in the proximity of another mobile terminal if the network operator has knowledge of where mobile
10 terminals are currently located. If the message comprises a display condition corresponding to the case illustrated in Fig. 4c and described below, the service node 50 will only forward the message when position data relating to both a first and a second communication device 90, 91 (Fig. 4d) is
15 within a specified distance.

Figs. 4a-4c illustrate exemplary geographical display conditions that have to be fulfilled in order to display the electronic message or a notification thereof at the mobile terminal 1. In Fig. 4a, an electronic communication
20 device 70 not having a position determination capability transmits an electronic message comprising a geographical display condition to a portable communication device 71. The portable communication device comprises a position determination unit for determining its geographical
25 position. When the portable communication device 71 is within or within a certain distance d_1 of a geographical area or position Y specified in the message, the message or a notification thereof will be displayed at the portable communication device 71. However, if the portable
30 communication device 71 is not within or within the certain distance d_1 of the geographical area Y, the message or the notification thereof will be stored in the portable communication device 71 until the geographical display condition is fulfilled.

In Fig. 4b, a first portable communication device 80 transmits an electronic message to a second portable communication device 81. The message has a geographical display condition specifying that both the first and the second portable communication devices 80, 81, have to be within or within a certain distance d_2 , d_3 of a geographical area or location Z. The distance d_2 and d_3 may be equal or different. The message is forwarded through the service node as will be explained below. The first and the second portable communication devices 90, 91 report their respective positions to the service node 50. Alternatively, the service node determines their respective positions from data reported back to the communication network. Once the geographical display condition is fulfilled, the message or a notification thereof is forwarded from the service node 50 to the second portable communication device 81.

Fig. 4c describes a situation similar to Fig. 4b. In this situation the geographical display condition specifies that a first and a second portable communication device 90, 91 have to be in proximity to each other, i.e. within a certain distance d_4 of each other. When the condition is fulfilled, the service node 50 will forward the message or a notification thereof to the second portable communication device 91.

It is also possible that the geographical display condition comprises information requiring that the transmitting device should be located within a certain geographical area or within a certain distance thereof when the message is displayed in the receiving device.

The geographical display condition may be combined with one or several other display conditions. A time display condition may specify that the message should be displayed within a certain due date or time limit. If the electronic device in which the message is to be displayed is not within or within a certain distance d_1 , d_2 , d_3 , d_4 of

the geographical area Y, Z or another device within the time limit, the message will never be displayed.

The geographical areas may e.g. be defined by the geographical co-ordinates of the outer boundaries thereof.

5 The coordinates may e.g. be provided with a certain mutual distance, wherein each area comprises an array of discrete co-ordinate values stored in e.g. the memory 33. Once the geographical position of the mobile terminal is determined, the controller 32, or an internal processing unit of the
10 position determination unit 31, may determine whether the current geographical position of the mobile terminal 1 is within the boundaries of any of the specified areas. If not, the mobile terminal 1 is determined being within an unspecified area.

15 A service provider may provide area co-ordinate data. The co-ordinate data may be downloaded from a communication network, such as the mobile telecommunication network 15. The user may e.g. download area co-ordinate data relating to e.g. all shopping malls within a specific.

20 Alternatively, such co-ordinate data is automatically downloaded when the mobile terminal 1 enters a new city or area.

The geographical co-ordinates may also be input into the mobile terminal 1 by means of a reading device, such as
25 a bar code reader. E.g. a grocery store advertising in a newspaper or magazine could provide a bar code comprising the position data of the geographical location. Such information may also be downloaded from a web site.

A software tool run on the computer 24 for creating
30 the geographical areas may also be provided. The software tool may e.g. provide maps over different countries and cities all over the world. Certain geographical areas within the maps may be defined by drawing a boundary around an area, e.g. by means of the mouse. Once the boundary is
35 provided, the software tool will automatically generate the

geographical co-ordinates of the area specified by the boundary. When the area is generated it may be transferred to the mobile terminal 1. Any geographical position falling outside a specified area may be specified as belonging to the unspecified area.

In Fig. 5, a flowchart of a method for forming and transmitting an electronic message according to the invention is illustrated. In a first step 100, the message is entered or written by means of the keypad 10. In step 101 it is determined whether the message should comprise any display condition. If the answer in step 102 is no, the procedure continuous to step 103. If the answer in step 102 is yes, the procedure proceeds to step 102, wherein any display condition, such as a geographical and any additional display condition, is entered by the user and appended to message. Entering the display condition may comprise selecting from a list of predetermined geographical areas or locations associated with geographical co-ordinates, which will be attached to the message. Each entry of the list of predetermined geographical areas may have a name to be easy recognizable, such as Grocery A, Shopping Mall B, Restaurant C, etc., or be presented with a picture or photo. Entering the display condition may also comprise entering a certain distance to a geographical area or another device, within which the portable communication apparatus, to which the message is addressed, should be located when the message is displayed. In step 103 the address or telephone number of the portable communication apparatus to which message should be sent is entered before the message is transmitted in step 105.

In Fig. 6, a method for forwarding an electronic message from an electronic communication device, which may be portable or stationary, to a portable communication device is illustrated. The message is relayed though the service node 50 of the communication network 15, wherein

the method is carried out e.g. by the processor 54. In a first step 200, the message comprising one or several display conditions is received by the service node 50 from the transmitting electronic device. In step 201, the addressed portable communication device, i.e. identification data attached to the message of the portable communication device to which the message should be forwarded is read. In step 202, the display condition(s) of the message is/are read. In step 203, the geographical position of the addressed portable communication device is obtained, e.g. according to above. Then in step 204 it is determined whether the display condition(s) is/are fulfilled, e.g. whether the geographical position fulfils the geographical display condition and whether a time limit is passed. If the answer in step 204 is no, the procedure returns to step 203. If the answer in step 204 is yes, the procedure proceeds to step 205, wherein the message or a notification thereof is transmitted to the addressed portable communication device, wherein the procedure is ended. Alternatively, if the notification is transmitted, the procedure comprises waiting to transmit the message until a request for the downloading the message is received, wherein the message is transmitted. If it is determined in step 204 that a time limit for forwarding the message has lapsed, the service node 50 may discard the message. Discarding the message may also comprise transmitting a message undelivered notification to the electronic device sending the message.

In Fig. 7, a method for displaying an electronic message in an electronic device is illustrated. The electronic message is received from another electronic device or from. In a first step 300 the message is received from an external device and temporarily stored until the display condition(s) is fulfilled. In a second step 301 the geographical position of the electronic device is obtained.

In step 302, it is determined whether the time display condition of the message is fulfilled. If the answer is no, the message is discarded in step 303. If the answer in step 302 is yes, the procedure proceeds to step 304, wherein it is determined whether the geographical position of the electronic device fulfills the geographical display condition. If the answer in step 304 is no, the procedure returns to step 301. If the answer in step 304 is yes, the message or the notification thereof is displayed in step 305, wherein the procedure is ended.

If the displayed message is a notification that a message is stored at the service node 50 the user may issue a request to download the stored message in response to the displaying the notification.

The present invention has been described above with reference to specific embodiments. However, other embodiments than the above described are equally possible within the scope of the invention. Different method steps than those described above, performing the method by hardware or software, may be provided within the scope of the invention. The different features and steps of the invention may be combined in other combinations than those described. The invention is only limited by the appended patent claims.

CLAIMS

1. A method for conditional displaying of an electronic message comprising at least one display condition for the message in a portable electronic device (1),
characterized by the steps of:
receiving the message from an external device;
determining the geographical position of the portable
10 electronic device;
determining whether the geographical position fulfills a geographical display condition of the message;
and
displaying the message in the portable electronic
15 device if the at least one display condition is fulfilled.
2. The method according to claim 1, wherein the step of determining whether the geographical position fulfills the geographical display condition comprises determining
20 whether the portable electronic device (1) is located within a geographical area specified by the geographical display condition.
3. The method according to claim 1 or 2, wherein the
25 step of determining whether the geographical position fulfills the display condition comprises determining whether the portable electronic device (1) is located within a certain distance specified by the geographical display condition from the location of another electronic
30 device, which has transmitted the message.
4. The method according to any of the claims 1 to 3, further comprising the step of determining whether a time limit of a time display condition for indicating a final
35 display time of the message has lapsed, wherein the step of

displaying is executed if said time limit has not lapsed when the geographical display condition is fulfilled.

5. A method for forming an electronic message in an electronic device (1), comprising the step of entering said message, characterized by the steps of

entering a at least one display condition comprising a geographical display condition for conditional displaying of the message;

10 appending said display condition to said message; and entering a receiver address to which the message should be sent.

6. The method according to claim 5, wherein the step of entering the display condition comprises the step of entering a geographical area in which the electronic device should be located when the message is displayed in another electronic device (91).

20 7. The method according to claim 5, wherein the step of entering the display condition comprises the step of entering a geographical area in which a portable electronic device (91) to which the message should be forwarded should be located when the message is displayed.

25 8. The method according to claim 5, wherein the step of entering the display condition comprises the step of entering a certain distance with regard to a specific geographical area, within which a portable electronic device (91) to which the message should be forwarded should be located when the message is displayed.

9. A method for forwarding an electronic message from an electronic communication device (1, 70, 80, 90) to a

portable electronic communication device (71, 82, 91),
comprising the steps of

receiving the message from the electronic
communication device;

5 receiving the geographical position of the portable
communication device;

characterized by the steps of

determining whether the geographical position of the
portable communication device fulfills a geographical

10 display condition of the message; and

forwarding the message to the portable communication
device when at least the geographical display condition is
fulfilled.

15 10. The method according to claim 9, wherein the
display condition comprises a time display condition, and
the step of determining further comprises the step of:
determining whether a time limit of a time display
condition has lapsed;

20 the step of forwarding is only executed if said time
limit has not lapsed when said geographical position
fulfills said geographical display condition; and

discarding the message if the geographical position
does not fulfill said geographical display condition within
25 said time limit.

11. The method according to claim 9 or 10, wherein
the display condition requires that the portable
communication device (1, 90) is located within a certain
30 distance specified by the geographical display condition
from the electronic communication device (91).

12. The method according to any the claims 9 to 11 ,
further comprising the step of receiving the geographical
35 position of the electronic communication device (1, 90),

being a portable electronic communication device, from said device itself.

5 13. A portable electronic device (1) for displaying an electronic message having at least one display condition for conditional displaying of the message, comprising display means (10, 13, 35) for displaying the electronic message, characterized by

10 receiving means (14, 17, 30) for receiving the message from an external device;

position determination means (31) for determining the geographical position of the portable electronic device (1); and

15 determining means (32) for determining whether the geographical position fulfills a geographical display condition of the message.

20 14. The device according to claim 13, further comprising a message interface (34) adapted to display the electronic message if the geographical position fulfills the geographical display condition.

25 15. The device according to claim 13 or 14, wherein the determining means (32) is adapted to, in operation, determine whether the portable electronic device is within a geographical area specified in the geographical display condition or within a certain distance therefrom.

30 16. The device according to any of the claims 13 to 15, wherein the determining means (32) is adapted to determine, in operation, whether the portable electronic device (91) is located within a certain distance from another electronic device (90), from which the electronic message has been transmitted.

35

17. The device according to any of the claims 13 to 16, wherein the electronic message is a notification message.

18. The device according to any of the claims 13 to 16, wherein the message is an SMS, an EMS, or an MMS message.

19. An electronic communication device (1) for forming an electronic message therein, comprising input means (10) for entering the electronic message and at least one display condition for conditional displaying of the message to be appended to said message, and a message interface (34) for forming the electronic message, characterized in that

the message interface is adapted to append to the electronic message a geographical display condition; and the electronic device (1) comprises transmitting means (14, 17, 30) for transmitting the message to an external device.

20. The device according to claim 19, wherein the message interface (34) is adapted to incorporate into the geographical display condition information with regard to a geographical area, in which the external device should be located when the electronic message is displayed.

21. The device according to claim 19, and wherein the message interface (34) is adapted to incorporate into the geographical display condition information with regard to a certain distance from the electronic communication device (1, 90) within which the external device should be located when the electronic message is displayed.

22. The device according to any of the claims 19 to 21, wherein the device is a mobile radio terminal, a pager,

a personal digital assistant, a communicator, a smartphone or an electronic organizer.

23. The device according to any of the claims 19 to
5 21, wherein the device is a mobile telephone (1).

24. A network node being a part of a communication
network for forwarding an electronic message having at
least one display condition for conditional displaying of
10 the message, comprising

receiving means (30) for receiving the electronic
message from a first electronic communication device (70,
80, 90); and

a memory means (53) for temporarily storing the
15 electronic message;

characterized in that

the electronic message comprises a geographical
display condition;

position determining means (51) for determining the
20 geographical position of at least the second communication
device;

determining means (55) adapted to determine whether
the geographical position fulfills the geographical display
condition.

25

25. The network node according to claim 24, wherein
the display condition requires that at least the second
electronic communication device (71, 81, 91) is located
within a certain distance of a specific geographical area
30 when the message is forwarded, and the determining means
(55) is adapted to determine whether the second electronic
communication device is located within said geographical
area.

26. The network node according to claim 24, wherein the display condition requires the second electronic communication device (71, 81, 91) to be within a certain distance of the first electronic communication (70, 80, 90) device when the message is forwarded to the second electronic communication device, and the determining means (55) is adapted to determine whether the second electronic communication device is located within said geographical area.

10

27. The network node according to any of the claims 24-26, further comprising transmitting means (30) for forwarding the electronic message to a second electronic communication device (71, 81, 91), said transmitting means is adapted to forward the electronic message to the second electronic communication device when at least one display condition is fulfilled.

28. A software program product embodied on a computer readable medium, comprising computer readable instructions for carrying out the method according to any of the claims 1-4 when carried out by a processor (32).

29. A software program product embodied on a computer readable medium, comprising computer readable instructions for carrying out the method according to any of the claims 5-8 when carried out by a processor (54).

30. A software program product embodied on a computer readable medium, comprising computer readable instructions for carrying out the method according to any of the claims 9-12 when carried out by a processor (32).

ABSTRACT

Electronic device (1) and methods for displaying a received electronic message at the electronic device. The electronic message comprises a geographical display condition. If the geographical location of the electronic device (1) does not fulfill the geographical display condition, the message will not be displayed. The message may be a message or a notification message thereof sent from a first to a second communication device. The geographical position may be determined internally of the device addressed in the message, or externally by a service node of a communication network forwarding the message.

To be published together with Fig. 2.

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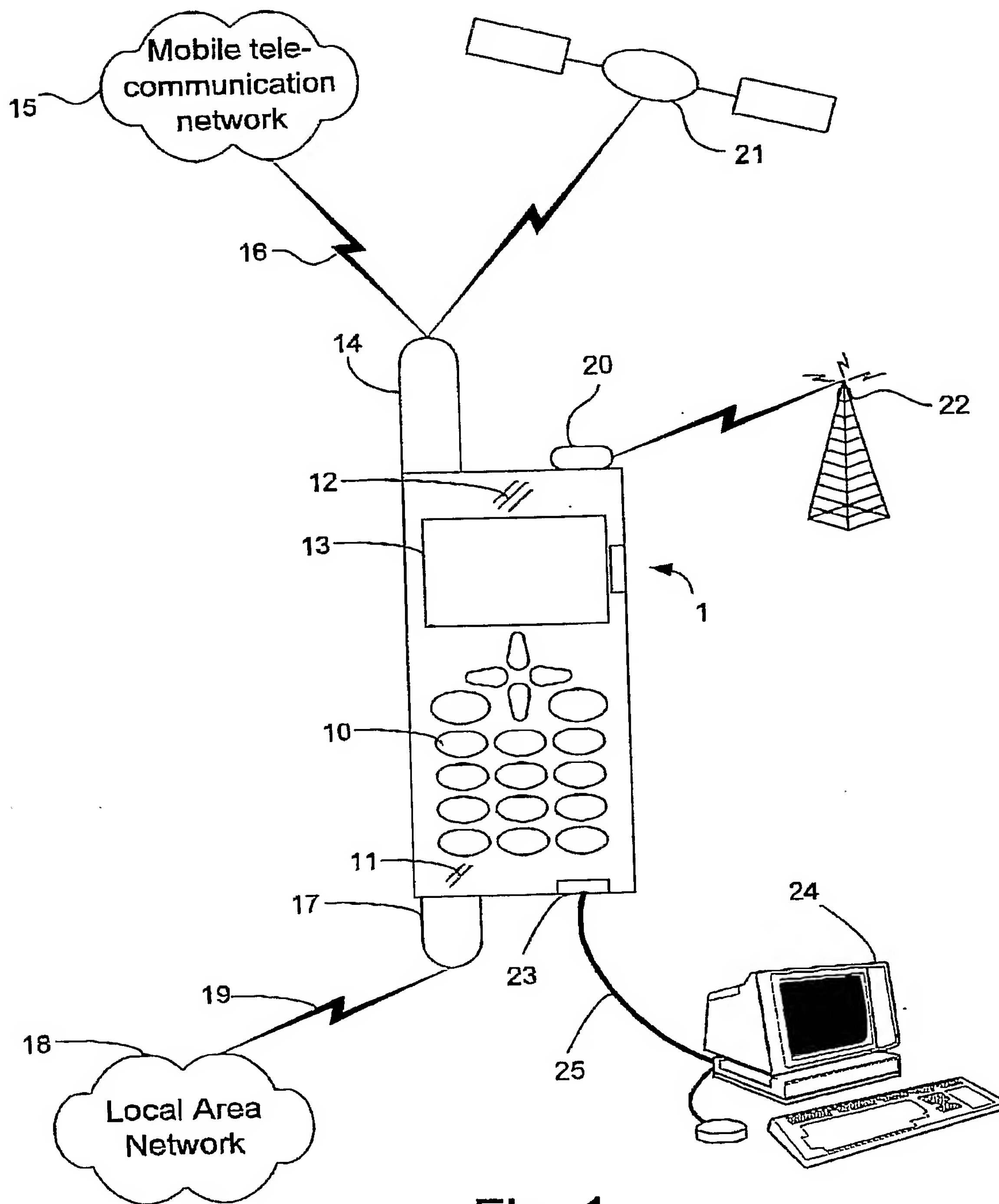


Fig. 1

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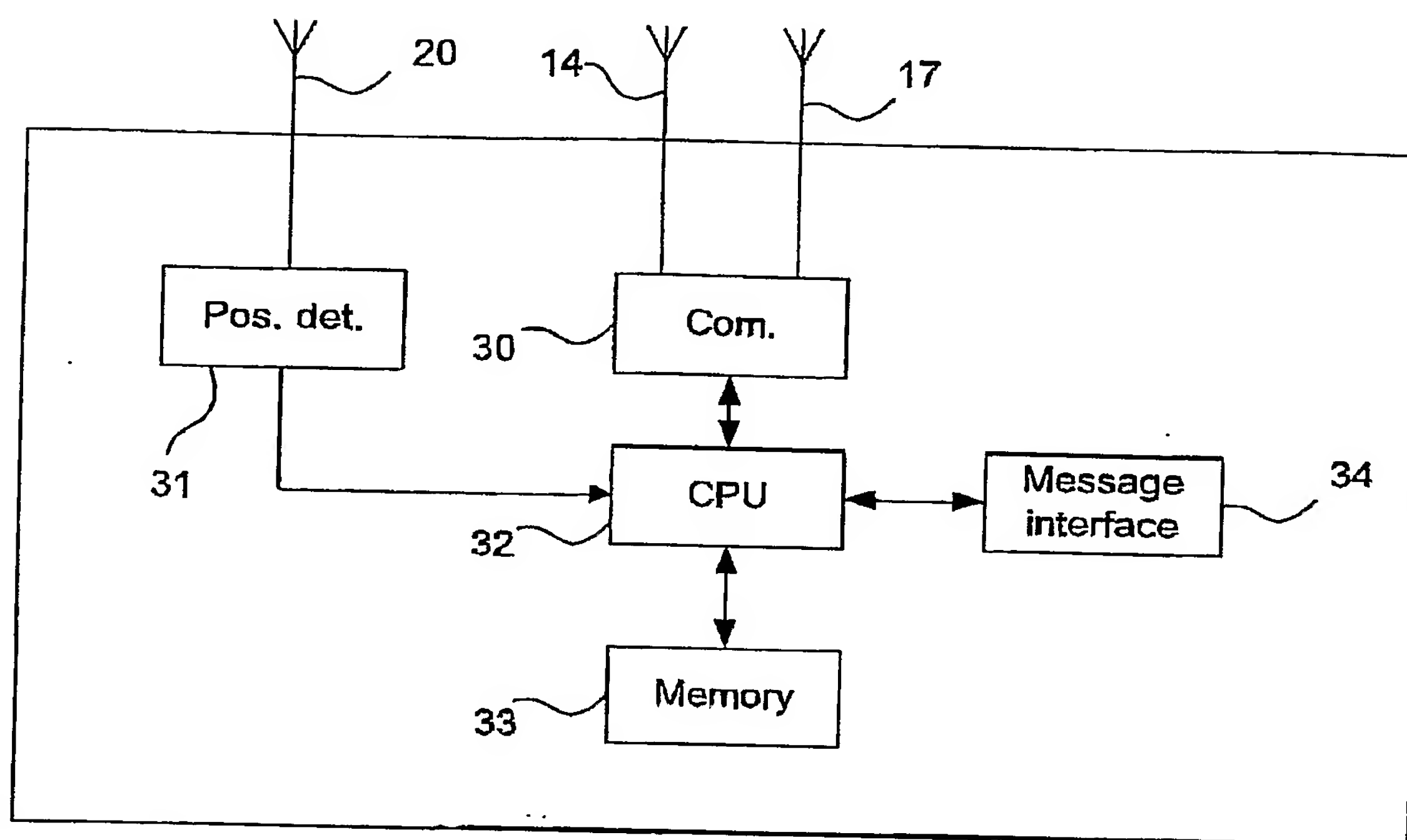


Fig. 2

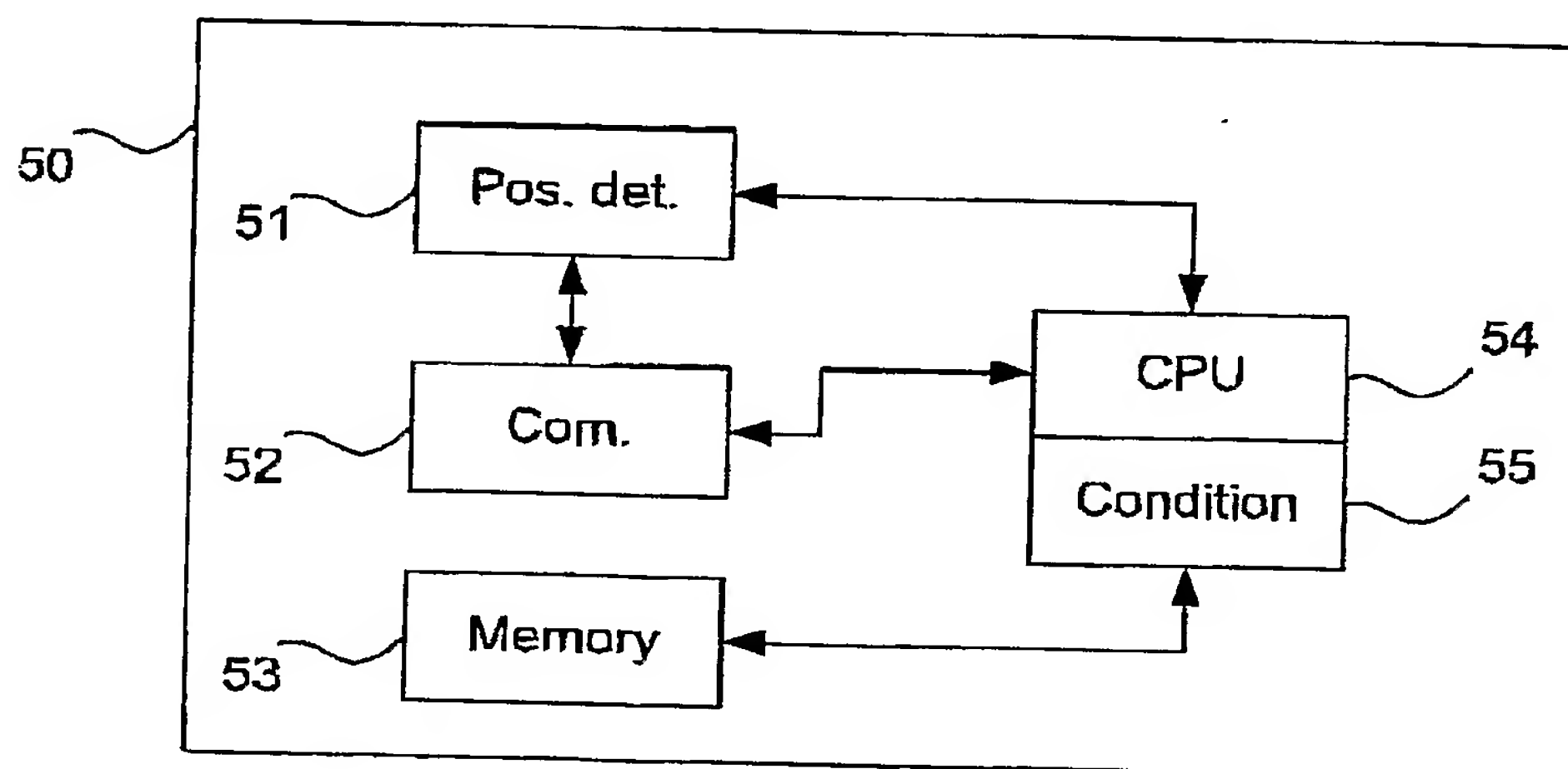


Fig. 3

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Fig. 4a

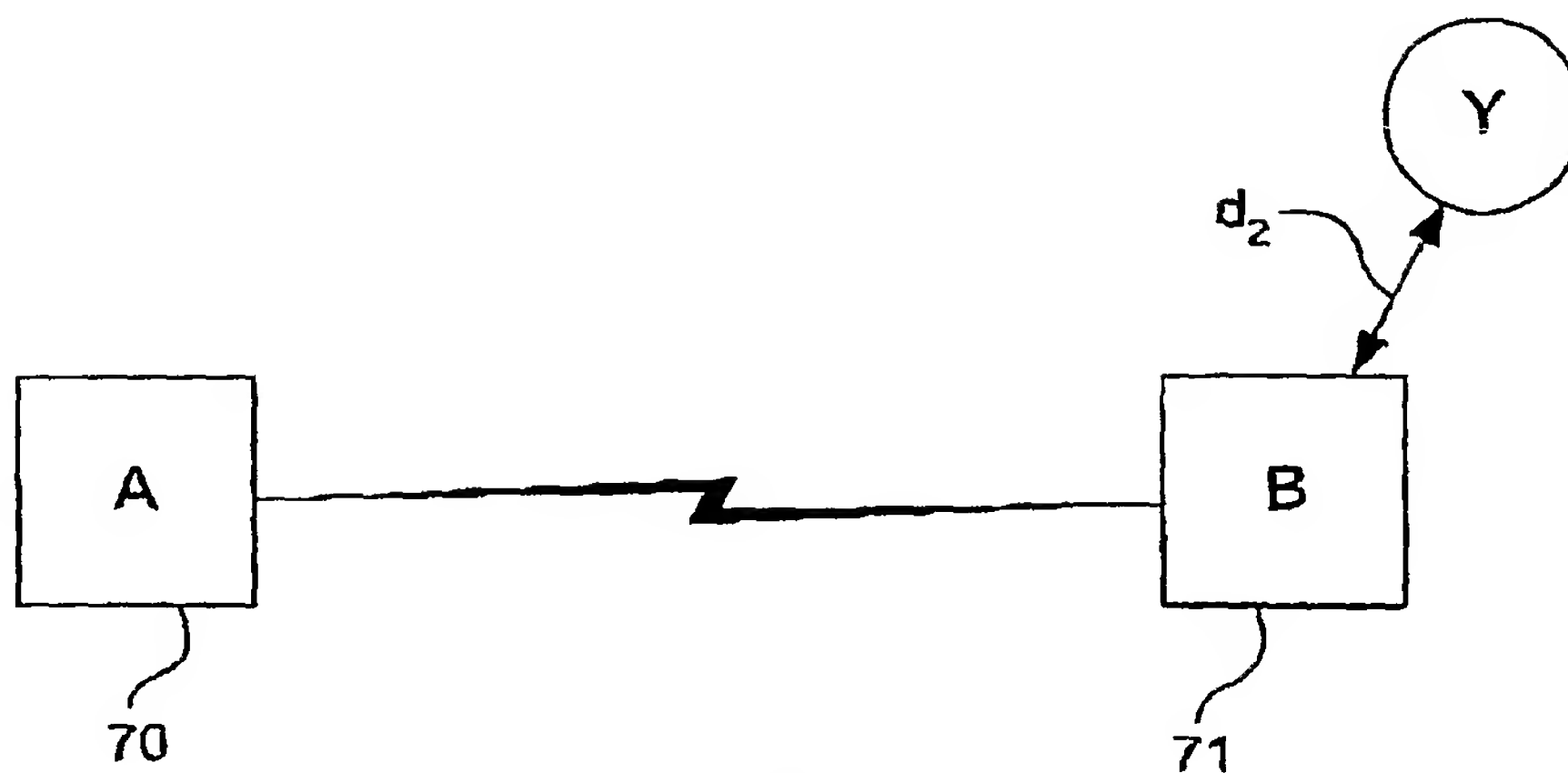


Fig. 4b

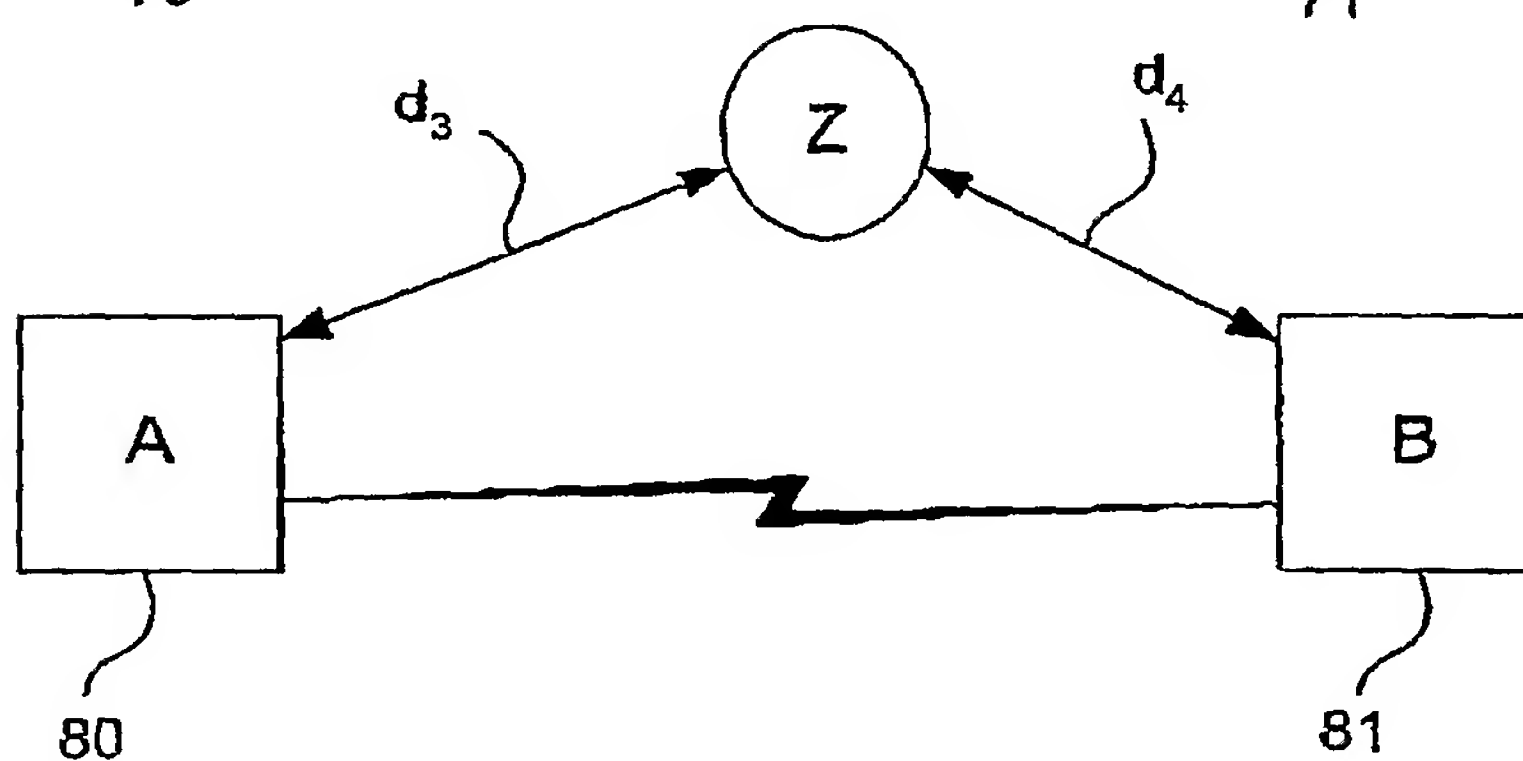
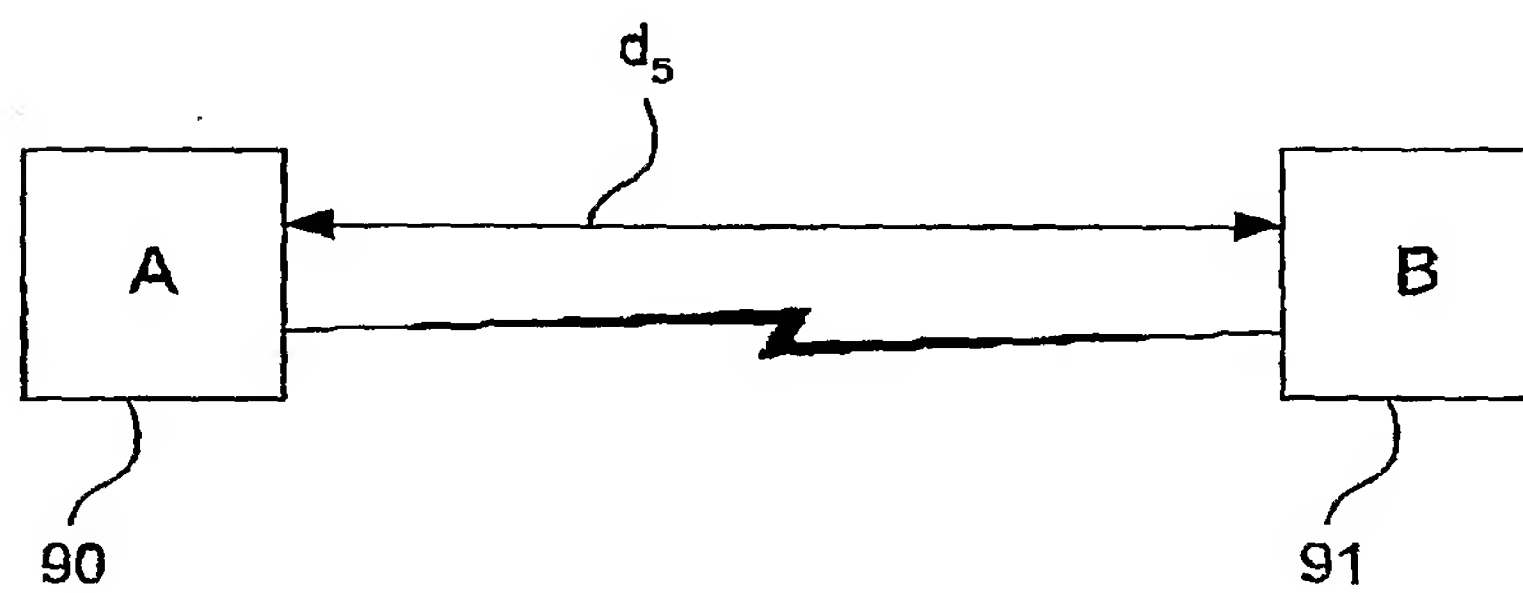


Fig. 4c



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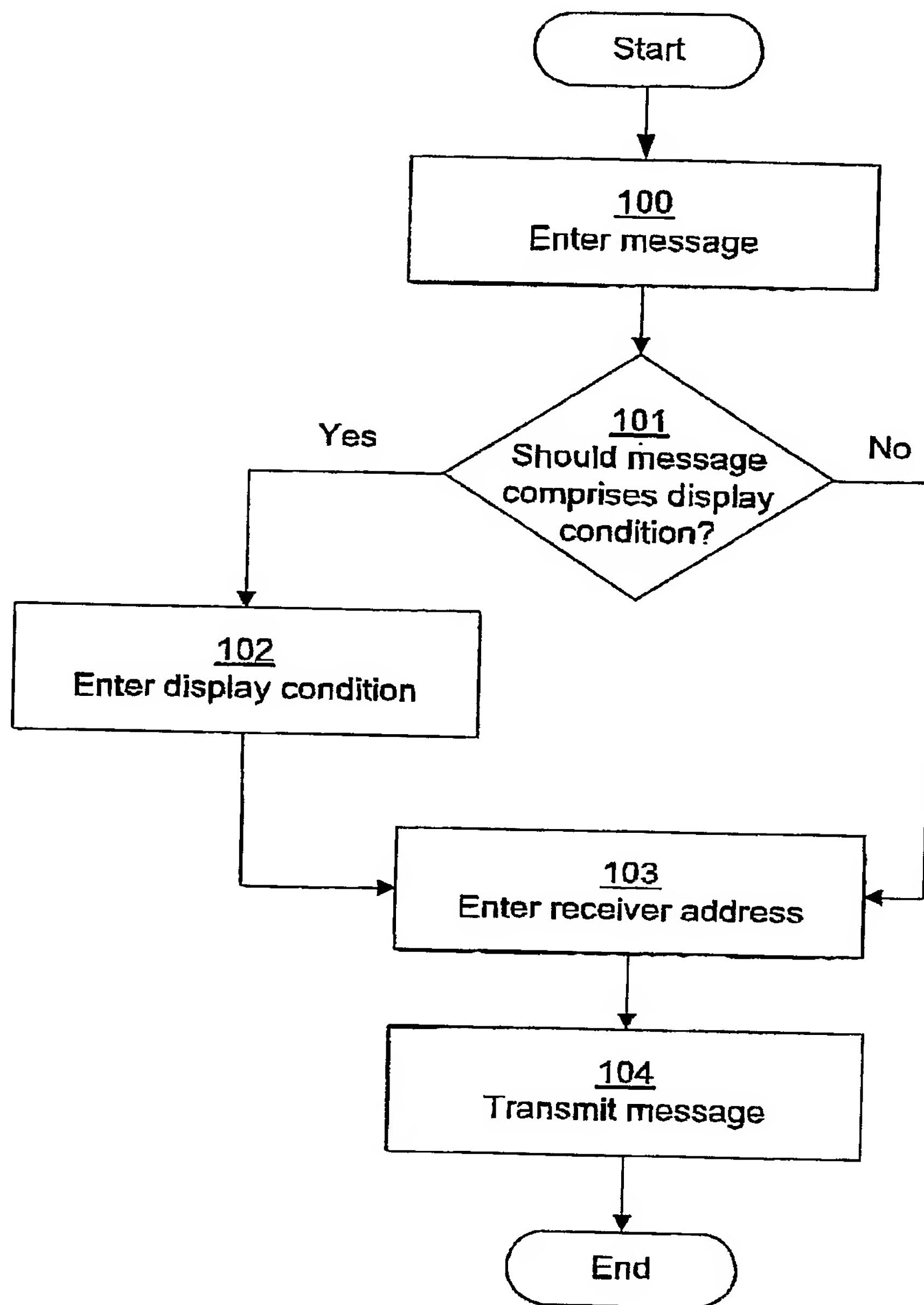


Fig. 5

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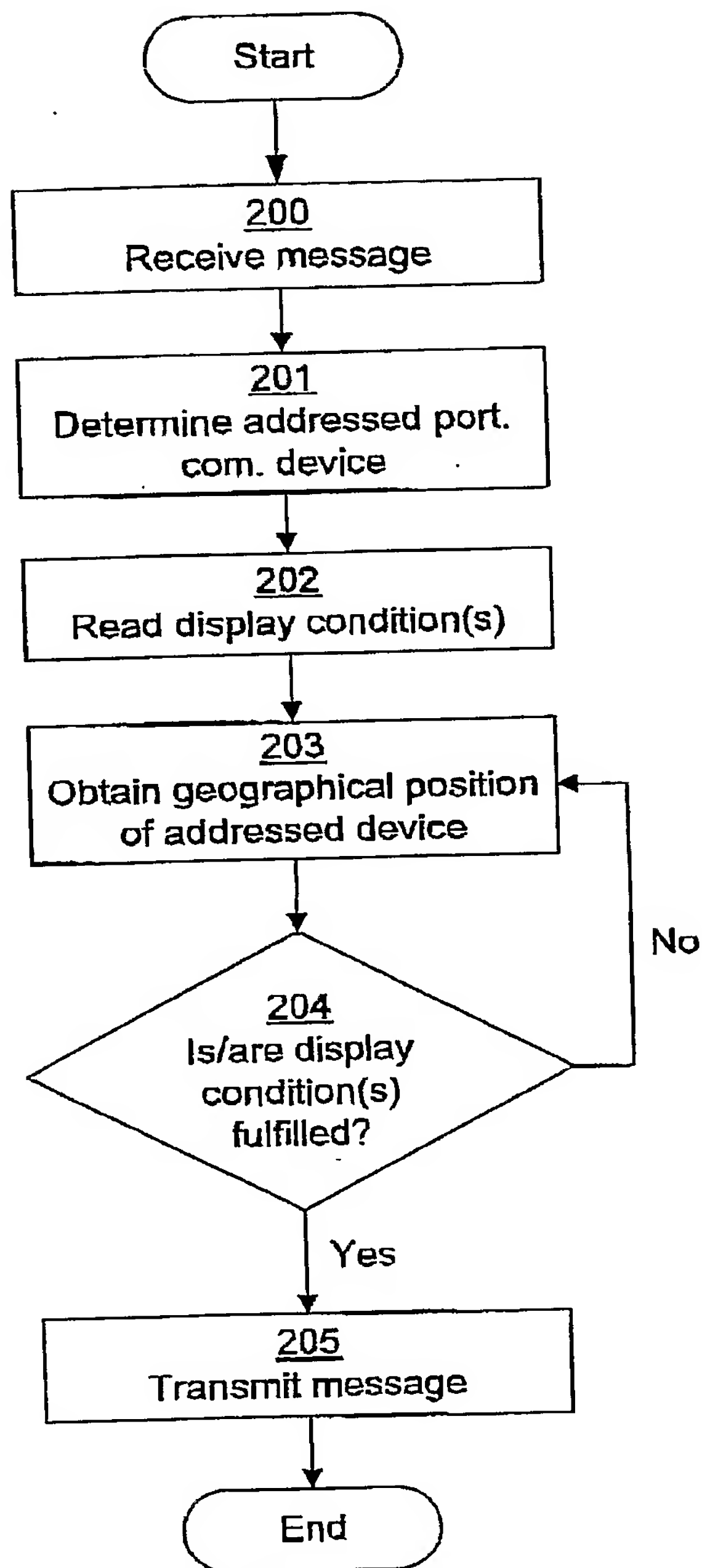


Fig. 6

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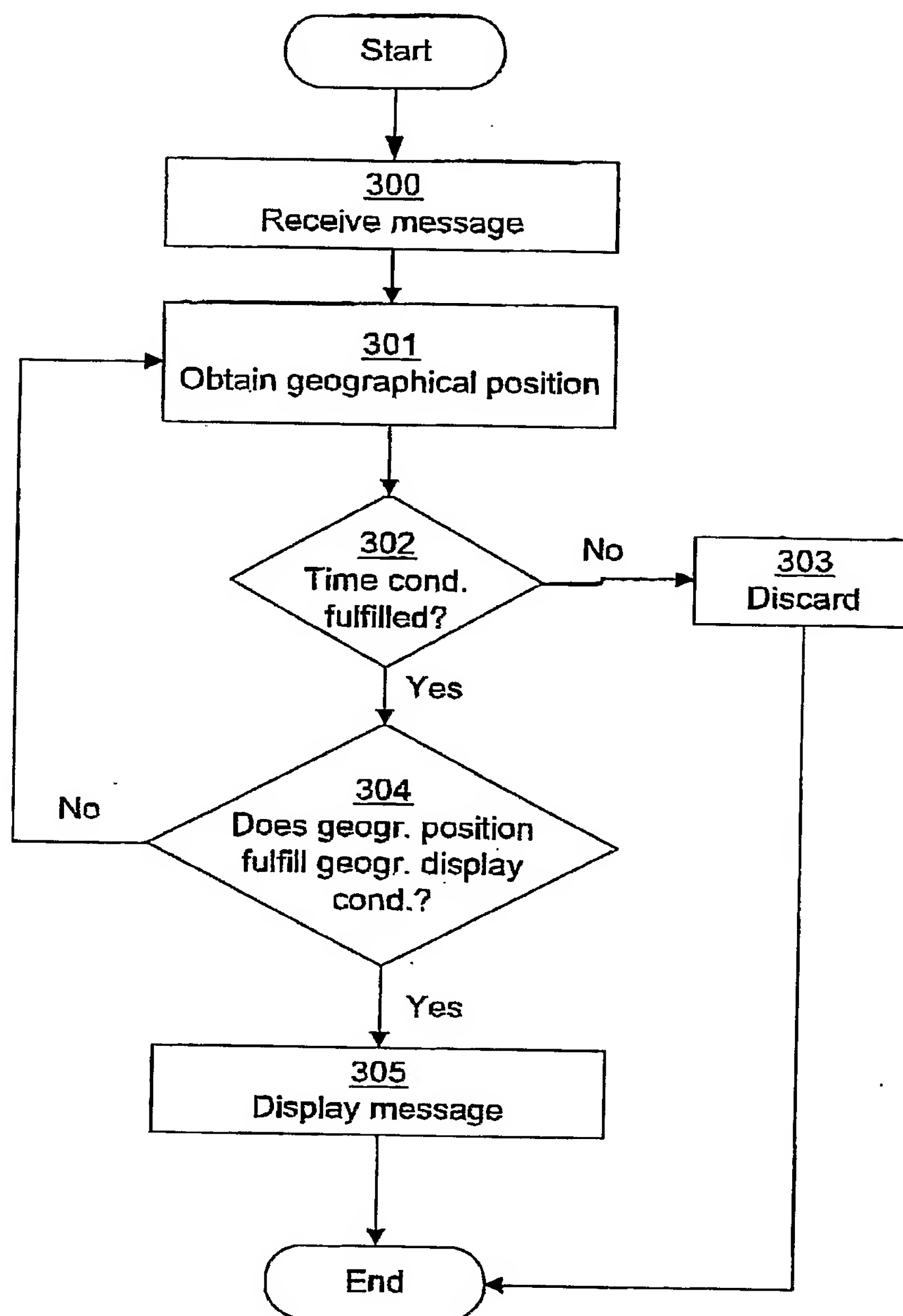


Fig. 7

